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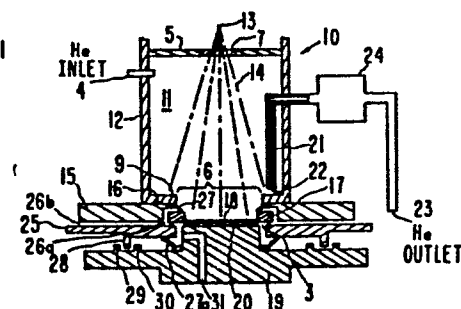
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⑤④ X-ray lithographic system, in particular gas control for the same, and method for fabricating a semiconductor substrate.

⑤⑦ An X-ray lithographic system and method for beam printing on a substrate such as a silicon semiconductor wafer includes a beam exposure chamber (11), a beam source (13), a mask holder (15), a mask (17) including a thin mask membrane (18) closing the exit end (6) of the chamber. A controlled flow of low X-ray attenuating gas such as helium is provided to an upper remote portion of the exposure chamber and vent means (21) extends from a lower portion of the chamber adjacent the mask to an exterior exit orifice (23) positioned at mask level to prevent ingress of air to the chamber and prevent deflection and change in the mask-to-substrate gap distance. The substrate (20) is positioned below the mask membrane and is surrounded by a mask-to-wafer zone into which is flowed a substrate fabrication process gas which is vented either by a gas flange (25) in spaced gapped relation to the mask holder and mask, or by a vent tube (46) extending from said zone to an orifice end (46a) approximate the level of said mask to assure no pressure differential on the top and bottom surfaces of the mask membrane affecting the mask-to-wafer gap distance (8) during substrate fabrication operations.

FIG.1





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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	WO-A-7 900 340 (WESTERN ELECTRIC) * Whole document *	1,2	G 03 B 41/00 G 03 F 7/20
E	EP-A-0 178 660 (HITACHI) * Whole document *	1,2	
A	EP-A-0 110 414 (HITACHI) * Pages 2,3 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			G 03 B G 03 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-08-1987	Examiner SEIFERT
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document</p>			